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THE JOURNAL OF PHILOSOPHY

METHOD

METHOD is the central theme of a technological age. It is man's effort to set up a certain order within an amethodic world. Nature has its uniformities as well as variabilities of action; but only man has method—the intentional redirection of action. How method emerged and how it functions in a world in which "man shifts things about and nature does the rest," is the subject-matter of this article.

In a world at war method is important; it is called strategy. In a world at peace method is even more important; it is called planning. We are not concerned with either military strategy or economic planning, but with those philosophical presuppositions which underlie both and which set forth method as an organic part of our experience as human beings. In this time of political conflict and economic confusion the need of sound method is obvious. But to attain this we must understand what method is in relation to other aspects of our total experience. We are not by endowment methodic. Method, in language, the arts, and the sciences, is an achievement, something that has to be learned. We have perfected technologies in certain fields, but they are being used destructively in competitive struggle instead of coöperatively in deepening and enriching our common life.

I. Method and action. Living in an age of the Great Technology it is natural to ask how this all came about. The answer is: scientific method. But what is method?

Science has shown us that the universe is a vast system of activities. Within the macroscopic, and even the microscopic, sensible world is a sub-microscopic ultra-sensible world of energies disclosed to us by sub-atomic physics. Even the most static and solid object internally is a dance of electrons, and pouring in upon us from outer space is a constant rain of radiant forces. Every object, event, act, organism is a dynamic center of interchange of such energies. An organism is intelligible only in terms of the environment with which it is in continual adaptive relation. It follows that method, which is a function of organic behavior, also is a form of interaction; as Dewey says, it "is *the* way of inter-

action by which other natural reactions become subject to direction." "When an interaction intervenes which directs the course of change, the scene of natural interaction has a new quality and dimension" (*The Quest for Certainty*, pp. 107, 214). Method is a special form of organic behavior which occurs only when the basic behavior patterns characteristic of the species fail to meet the needs of the individual. It is a secondary mode of behavior which intervenes when the primary modes break down. Overt action is postponed while this secondary form of activity which we call method steps in to deal with the situation in such a deliberate intentional redirection of the activities involved that the needs of the organism are met.

II. The origin of method. Method is a natural event; nothing magical, supernatural, or mystical about it. It emerged as a distinctive trait among our ape-like ancestors and gave them preëminence in the animal world. This trait was organic hesitation in the presence of a crisis instead of the blind direct response of reflex and instinctive action. This hesitation or arrest of overt action was the product of secondary forms of behavior which intervened to deal with the difficulty in a tentative, retrievable, preparatory way anticipative of the consequences of overt action. But these moments of hesitation and preparation at first were few and far between. They appeared sporadically and often accidentally, the product of emotional reminiscence and the fear of impending disaster. New modes of response tended to slip back into the ruts of custom and habit, so that method at first was largely, as the etymology of the word suggests, a following in the path of previous modes of response. That is, methods at first were largely routines. Only gradually did the secondary behavior become directive of the primary behavior. And only to the degree that this took place did the human emerge within the sub-human animal scene.

This emergence of method from a pre-methodic animal matrix, made possible by a secondary anticipative behavior, was the result, not only of certain structural changes—the erect stature, plantigrade locomotion, the opposable thumb, the liberation of the muzzle and larynx—but was the product of concerted action of the members of the social group, in the process of communication. The secondary behavior of manual and vocal gestures reinforced at once the development of the emerging individual and the advancement of a cultural milieu. Method presupposes group activity. By such concerted action man has fabricated an environment he calls civilization.

III. The behavior mechanism involved. Turning to a closer

analysis of this secondary behavior, it is clear that method is a mode of adaptive adjustment. It is a function of the finer musculatures, especially those of vision, manipulation, and speech. The accommodatory apparatus of the distance-receptors provides a kind of fore-action by which adjustments are made in defining the stimulus and thus, indirectly, in determining the response. Perception of the object is a kind of preparatory behavior in dealing with it. And even more important for method is the concomitant or substitutive behavior made possible by gesture and speech. Our primitive ancestor as he moved about in his primary activities doubtless uttered grunts and inarticulate mumblings at first, similar in import to the calls and cries of the hunt and the fight, but gradually, probably at first quite inadvertently, these comments of the secondary upon the primary behavior came to stand for these activities and substitute for them in a fashion—in other words, they began to serve as symbols. And what was at first an unintentional accident whereby the substitutive served as guide and preparation for later overt behavior, gradually became a deliberate purposive device for reënacting past events or rehearsing for impending situations. The redirecting of action has become intentional.

The intentional character of method is the urge of inherited structural trends, reinforced by habit drives, which determines the character and force of this secondary behavior. Since method involves the symbolization of the distant object, the attainment of which is the goal sought, the pressure toward this goal becomes characteristic of method. It is definitely teleological. The end-in-view is a projection of the past and present achievements and, naturally, the organism-as-a-whole becomes identified with it. The self-feeling and the feeling of freedom or spontaneity are the natural accompaniments of such organismic initiative.

IV. The primary situation. Turning from this necessarily conjectural account of the origin and evolution of method as a behavior mechanism, let us analyze the pre-methodic matrix as it appears on the human scene today. We are calling this the primary situation because it is the situation as experienced before the secondary phenomena of method enter into the picture.

Pre-methodic or unmethodic experience is characterized by immediacy, qualitative uniqueness, emotional integrity, and an unanalyzed implicit all-thereness of the elements of the situation which only become explicit when methodic inquiry begins. Everything is present in the primary situation, but present, not as known and analytically differentiated, but as qualitatively felt or sensed as a background for whatever specific activity is going on. These

are what Keyser calls "the permanent massive facts of life," unanalyzed and often chaotic, but important as the personal and cultural hinterland of everything that we do. It is against this background or rather within it that, under given conditions, method emerges.

The first distinctions are practical ones and even these are limited and largely predetermined by the activities already going on in the primary situation. It is the primary situation which sets the limits and determines the presuppositions of method when and as the methodic phase takes over. These limits and presuppositions are evident in the personal equation or subjective element and in the cultural compulsives which play such a large part in all our intellectual life. Operating unconsciously these become obstructing and distorting influences, but, recognized for what they are and brought under conscious control, these inevitably biased perspectives or points-of-view come to function as frames of reference within which the procedure of scientific inquiry can be carried on. It is clear that there is no such thing as presuppositionless thinking. Method is a secondary, derivative, and instrumental reconditioning of a subject-matter from within. It is the intussusception of action, the immediacy of the primary situation undergoing mediation, overt action arrested, turned back upon itself in those incipient attitudes we call ideas, and deliberately reshaping itself with reference to an end-in-view. This emergence of method is somewhat analogous to the change from rectilinear to vector motion, when a stream of electrons flowing through a coiled wire generates a magnetic field if the two ends of the coiled wire are brought together in the form of a solenoid.

V. When does the question of method arise? And now we are ready to ask: When does the question of method arise? And the answer has become obvious: the secondary behavior of method begins when the primary situation proves unsatisfactory, problematic. Method is a doubt-inquiry process. It is always concerned with a problem. It is the machinery of control in a crisis. A chart showing the types of crisis and instruments of control shows the sorts of problems man has had to confront in the evolution of that modified environment he calls civilization. Danger and enemies aroused the emergency patterns of flight and combat, evolving the instruments of control called weapons. Hunger and thirst and the pursuit pattern built up economic controls: the arts and the crafts, tools, machinery. Sex crises and the corresponding controls are represented in the family and the home. The necessities of social life and communication inaugurated an interiorized

intellectual life, while the minor exigencies of consummative experience evolved the technique of the fine arts.

VI. Method is the redirection of action through the interaction of ends and means. Turning to a factorial analysis of the secondary behavior we have called method we find that the subject-matter undergoing reconstruction in the problematic situation bifurcates into aspects or tensional phases known as ends and means. The ends (ends-in-view or purposes) represent the subject-matter of the situation imaged in a new phase more satisfactory and representing a relative control of the situation; while the means are those aspects of the troublesome situation which can be converted from obstacles or stumbling-blocks into instruments of control. An important distinction must be made between ends-as-finalities or consummations and ends-as-purposes or ends-in-view. The goal of all methodic reconstruction is the consummative experience represented by ends-as-finalities or values. The process of methodic inquiry itself is at once the elaboration of the plans, purposes, ideals, hypotheses, laws, principles of action leading to such a goal, and a statement in detail of the steps necessary in manipulating the material at hand for such a consummation. The intentions or purposes which impel men to action may be enumerated as the desire for security, the desire for power, the desire for social esteem, and the desire for excitement or adventure. The quest for the true, the good, and the beautiful springs primarily from the exigencies of the social processes of communication, coöperation, and consummation, respectively. The means or instruments of control have been elaborated from the primitive motor organs of the organism itself—muscles and glands—through successive stages of extra-organic evolution until today ninety-eight percent of the world's work may be done by extraneous energy. Not only the tool but the symbol, by successive abstractions, has become an instrument of analysis and control in forms undreamed of in a pre-scientific age. All meanings root in action and since method is the redirection of action through the interaction of idealized and factual meanings, meanings and the value experiences in which they culminate become an important aspect of method. The relation of meaning to action is expressed in what is called the operational theory of knowledge. Meaning is found only in action of some sort. An intended meaning is an intended act. Method is the execution of the intended meaning by carrying through the interaction of the intention or purpose with the facts or conditions to the point where, not only is the purpose fulfilled, but the facts themselves are reconstituted. All is action: life, evolution, ex-

istence itself. Method is this dynamic process ordered with reference to envisaged ends or ideals.

VII. The experimental method of inquiry. The greatest achievement of method to date is in the field of the experimental sciences. No doubt an even greater revolution will take place some day when we apply methodic principles to our social affairs. But this will not take place until the coöperative principle implicit in method becomes explicit in the public relations of men.

The so-called science of the ancient Greeks undertook to explain things by their properties, and these properties were carried back to fixed eternal principles or essences. Thus an object was hot because of caloricity, wet because of aquosity, cold because of frigidity; an organism was alive because of the vital principle, and mental phenomena were accounted for by the presence of a principle or essence called the soul. Relics of this point of view still linger about the margins of our hyphenated sciences.

The science of today deals not with properties or qualities but with the relations which these properties or qualities have to conditions and consequences. Nothing is fixed; everything is relative to everything else; the universe is a process of ceaseless change; and science is the correlation of these variables.

While, therefore, science starts from the problems of the primary situation, the common-sense plane, or what has been called the immediate experience of values, and while the goal of its inquiry is finally to culminate in a renewed experience of values on a different or higher plane, the essential nature of science itself is its concern with the relationships in which the objects, acts, events stand. In short, science may be said to be the technique of transition from one value situation to another.

The scientific procedure is not one of deduction from fixed principles, nor one of induction from facts whose nature is supposed to be already known, but a check of each upon the other. Since neither facts nor principles, in the beginning, are known, the situation with which science is dealing is an indeterminate one, and the scientific method is just the process of trying to find out what are the facts and what principles apply. And this is done by the transformation of facts into data, on the one hand, and the testing of hypotheses, theories, and princiles by experiment, on the other. Science, in other words, is the determination of an indeterminate situation.

The qualities and values of immediate experience are the primary setting for the elaborate intermediate technique of observation, theorizing, and experimentation which constitutes scientific method, and the culmination of this technique is in the

consummation of further qualities and values in renewed experience on other levels. Or, to put it in another way, science begins with a unique situation, act, event; analyzes it into particular facts and universal principles or laws; deals with the difficulties and problems which arise in the dynamic interaction of factors called experimentation (whether ideal or in the laboratory); and synthesizes the results in a new individualized situation, act, or event. That is, science not only begins with the individual but the individual is also its goal and consummation,—an individual which has been enriched and enhanced by passing through the particularizing, universalizing interpretation of meanings represented by scientific method.

The result is that, while science is not explicitly seeking any general statement of the nature of reality (a rôle which she rather disdainfully rejects as the futile pursuit of metaphysics), nevertheless the ultimate result of her varied coöperative researches is a new and progressively amplified world-picture which is asymptotically real.

Science has redirected the activities of nature to serve human ends. That is what we mean by method. Through science we have come to realize that the universe is a vast system of interrelated activities in which everything is changing. The same thing never happens twice; no two things are exactly alike. The earth is in a different place each day and at a different point in time. It is radiating its energies away at the same time that it is receiving into its bosom increments from outer space. Two hundred million meteors enter the earth's atmosphere each year and it is being constantly bombarded by cosmic rays. The universe itself is a cosmic adventure into an unknown future. We speak of the uniformity of nature, of natural laws, and of the recurrent cycles of the seasons, day and night, breathing, heartbeat, and so on. Science observes these uniformities, generalizing them into laws, but nature knows no laws. Nature is only a vast system of forces—perpetual variation, boundless spontaneity, ever becoming something different from what it has been.

It is in such a world—feral, variable, unpredictable, acausal, and amoral—that we find ourselves. Man makes distinctions of true and false, good and evil, beautiful and ugly, but these things mean nothing to nature. Innocent and infinite, nature will sweep down upon us in earthquake, tornado, fire, or flood as readily as she will nourish us by her sunshine and air and vitamins. Bacteria and mosquitoes and venomous reptiles are as precious to her as human beings, or rather, to speak more accurately, nature has no preferences, no ethical or esthetic or intellectual valuations. Na-

ture is just the brute fact of what happens. Values—truth, beauty, goodness, laws, principles—are contributed by man.

Man, of course, is a part of nature in the widest sense of the term, but when we speak of human nature we must remember that man is the only animal that has a science of himself. He is the only creature, so far as we know, who thinks in terms of religion, art, politics, economics, education, science, philosophy. He is the only creature who has built up a civilization with its institutions. He is the only creature in creation who has a method in his madness.

Man is a product of nature, yes. But himself a part of nature, he is putting a new meaning into the word "natural." Man, in method, is the great innovator. By method science is transforming nature into a humanized environment. By method man is building the framework of an ordered society. By method technology is making possible an economy of abundance and leisure. By method man is coming not only to understand himself, but to reconstruct his experience by a new synthesis of instincts and habits. By the harmonious interaction of actualities and ideals he is coming to feel emotionally at home in the universe—which is religion. He is coming to feel intellectually at home—which is philosophy. He is achieving that serenity and disinterested participation in the sensuous interplay of forms—which is art. Once we realize the unmethodic chaos out of which we emerged and the long arduous struggle by which we have climbed to our present achievements, we will not be surprised at our recurrent lapses into barbarism and jungle life, but will take courage to strengthen all those forces that make for human advancement. Nothing makes for progress so much as clear thinking. The gradual spread of the scientific habit of mind is the hope of democratic societies. The study of method is a contribution to the effort to bring about a scientific reconstruction of society.

VIII. Philosophy as methodology. One of the reasons for the antagonism between science and philosophy and for the indifference of even educated persons toward the discussion of philosophical problems, is due to the fact that many of the abstractions with which our traditional philosophies deal have no substantial referents, whereas the methodic abstractions of the sciences strive to keep in touch with them. It is primarily a semantic difficulty which some day will be corrected. Indeed, it is being corrected at the present time by the attention which is being directed to the true function of philosophy as methodology.

Philosophy in the past has been a theory of reality (ontology), a dogma of religion (theology), a theory of knowledge (epistemology), a theory of valuation (axiology). Today, when science

is transforming man's natural habitat into a technological laboratory, it is relevant that philosophy should be "a criticism of criticisms," as Dewey phrases it, "the critical method of developing methods of criticism" (*Experience and Nature,* 2nd edition, 1929, p. 437). Methodology is the philosophy of a power age. Its fundamental concept is action. Some day, in a coöperative economy, some one will write a philosophy for an era of abundance. In such a philosophy the emphasis will be, not on action and power and efficiency, but on reflection and vision and human values—the philosophy of a beautiful if not a stream-lined world.

IX. The categories: a morphology of method. The abstractions which have played so large a part in the history of reflective thought fall into place as intelligible contributions to a world-view when they are seen in their true light as phases of method. A concept is fundamentally a symbol of an operation to be performed. All meanings go back to action, behavior of some sort. Method is the redirection of action. Categories are condensations of method. A technician, skilled in the fields of philology, semantics, and psychology, some day will trace the genesis and evolution of the successive levels of abstraction by which man has, in historic periods, sought to solve the problems posed by the indigenous and fabricated polarizations of experience.

Concepts are a quarry of fossil morphs of method. They represent the petrifaction of the past thinking of the race. As morphology discloses in the animal body vestiges of organs once useful in adapting the organism to its environment, so among our ideas we find, side by side with those currently operative, relics of past types of adjustment. These we call superstitions, traditions, rites, customs, creeds, codes, rules, laws, statutes, dogmas of all sorts. These are morphs of method. Concepts and categories are methods in epitome, the precipitate of past experiences, which often emerge as useful adjuncts in new problematic situations. They are vestiges which crop up from past methodic encounters just as instinctive emergency patterns often irruptively take charge in certain situations before the slower processes of thought get under way. Both are patterns, but the categories, unlike the instincts, are the product of past reflective processes. They are the products of analysis of situations. Since these condensations were themselves the product of specific situations and reflect the intentional or purposive character of those situations, their value is wholly relative. As each fresh difficulty or problem presents itself these fragments of method from past situations are recast and reconstructed. Thus thinking is not only a reorganization of the con-

crete objective situation, but a continual reconstruction of the categories.

All philosophy has been an attempt at such a morphology, but on the whole with little success until Hegel. There were only tables of fixed categories such as those of Aristotle and Kant. Hegel was the first in a large way to try to work out a genesis of the categories. A glance back over the history of mankind on its intellectual side shows that it consists of a series of attempts to bring to consciousness instinctive modes of adjustment so as to be able to control action on future occasions. Or, to put it in another way, the history of thought is the history of man's attempts to state the theory of his practice. Even the most abstract philosophical theories root ultimately in the needs of action and have a relation to the economic, social, religious, artistic, and political background of the time. The clearest minds of a period endeavor to disentangle the essential meanings from the particular limitations of the language and customs of the time and place. Viewed in this way, as a search for the fundamental morphs of method, the history of thought becomes a fascinating study of the ways by which men have met their problems of adjustment to new situations down through the ages.

The evolution of the categories is a condensed history of man's struggle with the environment and with his fellow men. If philosophy distinguishes between reality and appearance, between essence and accident, between substance and attribute, this probably harks back to a time when such distinctions were of crucial importance in the struggle for existence, when it was imperative that these aspects of the situation should not be confused. The distinction of the one and the many, identity in the midst of change, an absolute in the midst of the relative, the real in a world of seeming and illusions is a pathetic reminder of the search for security and the quest for certainty. Doubtless a realism and an idealism, a materialism and a spiritualism, a naturalism and a transcendentalism, are likewise the tacit record not only of frustrations, but of those forms of wish-thinking by which the race has sought to escape them.

Aristotle, Kant, and Hegel gave us tables of the categories. For Aristotle they expressed the fundamental characters of reality. For Kant they were forms of the understanding. He took over the forms current in the deductive logic of his day, but failed to recognize that in his "transcendental unity of apperception" or self-consciousness he had introduced a new category which involved a transformation of all the others. Hegel was the first to stress the relativity of all the categories and even he was inconsistent in the

application of his doctrine, since, as Schopenhauer made clear, he failed to recognize the relativity of the rational and the irrational, the true relation of method to its pre-methodic matrix.

Darwin did more than any of the philosophers in introducing a really genetic account of the categories when he entitled his great work "The Origin of Species," that is, the origin of forms. Before his time the idea that species or forms or kinds or classes of plants and animals had a natural origin was quite foreign to thought upon these subjects. Their kinds or classes were determined at the beginning of the world by the Creator. That a species might originate in the process of evolution or be transformed into another species was a world-shaking idea fraught with subversive possibilities which could not be entertained for a moment. On such a theory man might be an accident of nature; he might be a distant cousin of the monkey; he might have evolved from forms even lower in the animal scale. According to such a doctrine new forms might arise out of conflicts of old forms, and this would apply to institutions as well as to biological types. While Darwin was not directly concerned with the categories, no one has done more to undermine the ancient idea of their rigidity and their givenness.

So, too, the poet and the artist make helpful contributions to true method by their creative insights, because they are not inhibited by the formal terms of a frozen nomenclature. Language can be a hindrance as well as a help to thought. Many of the great advances in the field of knowledge have taken place outside the field of formal ratiocination—in the arts and in the hyphen-sciences, in the interstices between the solid blocks of past accumulations which have become inert and rigid. The vitality and significance of a method come ultimately from the concrete particularity and rich detail of an experience that overflows all forms and categories. There are miracles of new quickening that have not been dreamed of in our barren methodologies. Method is valuable but it is not a substitute for the unique adventure of being alive in an expanding universe.

Categories are abstractions on different levels from the primary situation with its unspeakable sub-verbal concreteness and uniqueness. They are not less real because they are abstract, but their reality is ideal rather than actual, and transitive rather than substantive. As symbols lose their naturalistic character they become less adequate as an expression of the intent and portent of the meaning, whereas, on the other hand, as they become abstract, they often express more adequately its content and extent. The value of abstractions lies in the very fact that they are not specific,

concrete, individualized. They perform the same function that a transportation or communication system plays in relation to the individual units which make up a great community. They are transitive in import. They are transitional verbal vehicles, not substantial substantive end-results. They are the common elements running through all the concretes from which the abstraction is made, enabling us to pass up and down the gamut of unique individual objects, acts, or events, evaluating them in terms of each other.

Because categories are abstractions and abstractions come to be treated as finalities, they are apt to lag behind the changes that take place in an evolving world. The value of a category lies in its generality and comprehensiveness, not in its finality, as Aristotle conceived of essences. They often make sense at the time of their origination because at that time they are summaries of methods effective at that time. But it does not follow that they will always serve in any situation at any time as so many philosophers have assumed to be the case. Like the methods which they summarize they are constantly undergoing change if they are operating in a changing world. They become postulates in new situations.

Lifted from their situs as petrifactions and rehabilitated as hypotheses the categories participate in the operative procedure of scientific inquiry. They not only represent a methodological paleontology; they also are, as it were, an instrument board for touching off experimental operations. Viewed in one light they may be relics of past methods; viewed in another aspect they are formulations of operations to be performed, guide-posts in that triangulation toward consequences we call method. They are not self-evident, immutable, underived, *a priori* first principles intuitively given *to* method. Method itself originates them. They are postulates, not axioms. They are the product of long ages of human association and communication by which have been accumulated in language and the arts the massed meanings of that cultural matrix we call civilization. Like all logical forms, they are derived from examination of methods previously used, their trustworthiness being determined by the consequences they have produced. They are forms becoming formative. As the facts or data are the material means, so the categories as postulates are the procedural means, the form which the end-in-view takes to bring about the end-as-a-consummation.

X. The antinomies: a challenge to method. One characteristic of modern philosophy is what Morris Cohen calls "the insurgence against reason." While science was laying the basis for the

tremendous accomplishments of recent years, philosophers were announcing that in all fundamental matters the human understanding is blocked by basic discrepancies or contradictions which were alleged to be inescapable and insoluble. This revolt against reason began with Kant's *Critique of Pure Reason* and has taken different forms in Spencer, Bradley, Bergson, Balfour, and others. Just when science has succeeded in regulating changes in nature, begun to control its forces, and given man an unparalleled power over his environment, philosophers tell us that reason can explain phenomena only, not reality or things-in-themselves (Kant); that knowledge, since it deals with relations, can not be applied to ultimate problems which are beyond relations (Spencer); that the attempt to think through any problem in a fundamental way lands us in contradictions (Bradley). Just when knowledge is giving us power practically we become skeptical theoretically. This skeptical outcome of the examination of the fundamental categories is summarized in the form of what in philosophy have come to be called the antinomies. In logic they are called dilemmas or predicaments. In ordinary language they are known as paradoxes or plain contradictions. It is as if it were said at the very beginning of our inquiry: You seek to state the method of experience. There is no such thing. Reason at all fundamental points fails us. There are no alternatives on ultimate questions except agnosticism or mysticism. Here indeed is a challenge to method.

The human mind for a long time has been puzzling itself over the problem of squaring the circle, the quantitative infinite, perpetual motion, absolute beginnings and endings, the idea of totality, of perfection, of an absolutely absolute Absolute, what reality is like when we are not experiencing it. Then there are the puzzles of reality and appearance, mind and matter, the one and the many, permanence and change, time and eternity, freedom and necessity, unconscious mental states, the egocentric predicament, and how a mind can know an object outside itself. And recently there have been added from the economic field such paradoxes as progress and poverty, scarcity in the midst of plenty, over-production and underconsumption. Zeno the Stoic, Kant the critical rationalist, Spencer the positivist, Bradley the absolute idealist, from their different points of view, confront us with the antinomies. Kant and Hegel recognized their importance. Kant regarded them as due to the attempt to use reason to go beyond experience. Hegel regarded them as an inevitable but transitional stage in all thinking. Herbert Spencer, like Kant, thought they resulted from the effort to know the unknowable. F. H. Bradley declared them resolvable,

but only in an immediate supra-relational type of experience to which thought can only point the way.

There are various proposed solutions of the antinomies. Many are merely verbal puzzles. Some are due to falsely stated problems. Some go back to a confusion of indigenous polarizations of natural events with the dichotomies set up by abstracting analysis. Some assert that reality is essentially unintelligible (irrationalism). Some are explained by the limitation of our senses. Others are explained by the limitations of the human understanding (agnosticism). Since experience is a wider field than mere knowledge, there are those who claim that many of the antinomies vanish in the immediacy of faith and feeling (mysticism). Zeno's paradox of Achilles and the tortoise is resolved by the infinitesimal calculus. Kant's and Spencer's antinomies are the product of an either-or logic. Bradley rightly perceived in the final analysis that the alienation of aspects always culminates in some new form of immediate experience. Hegel insisted that contradiction is an essential stage in the evolution of knowledge, that the antinomies are sublated in a higher synthesis. And, finally, it is clear that most of the antinomies are due to the hypostasizing of abstractions.

A true understanding of the function of abstraction in the methodical analysis of a situation is the key to the solution of the antinomies. Abstractions are true of that portion only which is abstracted from the whole. Not only so. Abstractions are true of classes or kinds only, not of individuals. The effect of this is that, while abstractions are useful in the comparison of mass phenomena, they do so at the expense of the peculiar traits which distinguish one individual from another. As symbols they are thus, as a rule, quite remote from the referent, especially in the case of high-order abstractions such as those of mathematics where the referent is usually altogether ignored. But abstractions are an important aspect of method. They are the super-highways which unite the remotest referents into a meaningful whole. Their very abstractness makes it possible to bring objects, acts, events, situations of the most varied traits into a common picture, since all entities have at least one trait in common: the fact of existence. Being, the most abstract of all abstractions, expresses this common trait.

Man's use of method has consisted of a succession of abstractions from the immediate unanalyzed concrete whole of experience as we find it in the animal or in the child. Objects, acts, events at first are an inchoate melange of things vaguely felt rather than clearly perceived. Only gradually does the object jut out and take on definite form in the midst of an immediacy still unselfconscious.

Only as the symbol comes into operation is the present distinguished from a past and a future. Events, like objects, are concretions in a magma of immediacy—qualities and feelings immediately experienced but still unanalyzed and undefined. Acts are the last to be abstracted. Until late in the succession of abstractions they remain bound up with the entities, the properties, and the urgencies which occupy the foreground of an unfolding experiential content. Experience as process; space, time, causation; action as distinct from the actor and the thing acted upon—are second-, third-, or fourth-level abstractions, increasingly remote from the referent. If we keep in mind some such picture of the succession of abstractions by which our intelligible world has been built up, it will not seem surprising that at various points we have slipped into pitfalls of misinterpretation and contradiction. The solution is clear thinking, methodical analysis, and never to let go the Ariadne thread that leads to the referent.

Nearly all the words in any sentence are abstractions. It isn't only the philosophers who deal in them. We are all involved by reason of being human. Man lifted himself out of the concrete immediacy of animal life when he began to think, and a ladder of abstractions was the means by which he climbed up. Were it not for the respect science has for the referent we should still be floating in that stratosphere of abstractions which has dominated man's thinking for thousands of years. In skilful hands abstraction may become one of the most useful instruments in advancing methodic analysis, but in untrained or careless hands it often becomes the source of increasing confusion. The antinomies are the product of such confusion. Instead of serving as aids in passing from one experience to another the abstractions are frozen into static existences. The abstractions having been made in the first place because of differences, it is not surprising that they should prove incompatible. Their opposition proves nothing; it merely poses a problem. Since they are equally abstractions from a concrete experience, the problem is not one of choosing between them but of understanding them in terms of each other.

But the antinomies of formal logic are not the only challenge to method. Science itself throws down a challenge in what is called the uncertainty principle or the principle of indeterminacy. The challenge the scientist makes concerns the knowledge-process itself. Since knowing is a dynamic, operative procedure, in limiting cases the observation and analysis of an object so disturbs or even alters it that, judged by traditional standards, knowledge becomes impossible or at least inaccurate. This criticism by the scientist is due to the fact that he has failed to apply the relativity principle

to his own procedure. Since everything is relative to everything else, it follows that this is true of the interaction of the knower and the object known in the knowledge-process. While it is not apparent in our perceptions on the macroscopic level, it nevertheless is true that in all perception the object perceived is in active relation with the percipient. In limiting cases this may mean an actual re-shaping of the object perceived. Here method finds its culmination—participating in the very existence and evolution of an expanding universe.

XI. Democracy as method. The greatest challenge to method is in the field of human relations. Science has been called the democracy of the intellect. But we are not scientific in our redirection of social forces. Within certain limits scientific method has been applied successfully: in the production of instruments of warfare, in the mass-production of industrial products, in the improvement of the means of transportation and communication, in the fields of agriculture, medicine, meteorology, astronomy, anthropology, chemistry, and sub-atomic physics. But in the important field of public relations of peoples and nations, races and classes in human society, surprisingly little has been done to meet such crises and problems as confront the world at the present time.

Two world-wars within a generation, evoking the most revolting regressions to jungle tactics, are enough to make every intelligent man and woman do some fundamental thinking. That thinking concerns democracy as a method of administering human affairs. Democracy as a guiding fiction has been twinkling over the marshes of human endeavor for centuries, but so far it has been tied up in semantic confusion with all sorts of misleading slogans that have prevented us from facing the facts and from formulating clearly the program for a democratic society. Even now, in the midst of a second world-war, which nominally is being fought for the freedoms democracy represents, there is little evidence that mankind is ready to renounce its primitive emergency patterns in favor of a deliberative consideration of the ends and means necessary to universal human welfare. The methods by which science is able to lift the load from labor's back cut straight across the devices by which the defenders of the present order seek to retain their position and power. Scientific method liberates new forces and multiplies opportunities, but the defenders of a predatory class-system seek to restrict the benefits of a new social order to a privileged few.

The problem presented to democracy as method is not a complicated one. On the economic side it has already been solved in principle. The instruments for operating a democratic society are

at hand. What is lacking is a clear formulation of the illusory ideal which, like an *ignis fatuus,* has been flitting before men's eyes until they no longer know their own minds. Until we are willing in every region of human activity to accept the fundamental principle of coöperation by which what is good in our civilization has been built up, we will continue to revert to the wasteful ways of a pre-human regime. It is true that competition is a fundamental law of nature, but in an intelligent human society it is subservient to another fundamental law, the law of coöperation or equality in association, the law of human progress, as Henry George called it. The coöperative principle implicit in method becomes explicit in democracy and competition is relegated to its true rôle of assuring qualitative excellence and efficiency.

Coöperative competition to produce the best of everything, including human beings, is the solution of the social problem. A coöperative society is an intentional redirection of the forces of competition to the ends of human welfare. Competing for the best, within the limits of coöperative fair play, sustains at once the vigor and virility of our animal inheritance and carries to the finest issues those secondary enrichments of life made possible by method as intelligence.

In principle the solution is simple. The difficulties lie, not on the side of the means, but on the side of human purpose. If we really wish a democratic society we have all the means at hand in the Great Technology. Our problem is the psycho-social one of clarifying our own intent, of arriving at a clear ideological pattern or plan upon which to proceed. Is it or is it not a people's war? Is it or is it not the century of the common man? The true test of democracy as a method of administering human affairs is at hand—in the consequences of our own action individually and socially in the present crisis.

In spite of all our patriotic self-assurances, democracy is still an hypothesis in the experimental stage. It is up to us to keep a watchful eye on the machinery by which the social forces we inherit from the past are redirected to different ends. No laboratory procedure requires more vigilant attention than this social experiment. Politics must be subordinated to statesmanship. The teaching profession must be exalted to the highest place among our cultural institutions. Medicine, newspapers, radio must be social services, not profit-making private enterprises. There must be no copyrighting of ideas. Inventions must be open to all. Enterprise, for the first time in history, must be really free—free not only from monopolies of all sorts, special privileges, and class legislation, but free to compete on equal terms to produce the best, not

for money profits but to win that social esteem which, in the last analysis, is the highest award to which man aspires. Such a program offered in the scientific spirit of consultive inquiry might soon revolutionize the social order. Out of such a democratic reconstruction might emerge undreamed cultural achievements by individuals and groups, the product of that coöperative competition which stimulates, rather than represses, the creative spirit of man. And out of the spontaneous valuation of these achievements might arise an aristocracy, democratically arrived at, in which the best, by common consent, would become the cultural leaders of mankind.

To smear such a program by calling it socialistic or communistic is to violate a fundamental principle of scientific method, which is to keep all hypotheses and theories in a fluid state until tested by the consequences of experimental operations. To block a social experiment by emotional propaganda is to regress to a pre-scientific era. It evokes emergency patterns of fear and hate in place of the deliberative debate of issues, which is the true technique of a scientific democracy. (All newspapers please copy.)

XII. Retrospect. In these days of relativity we do not need to be reminded that the verbal statement of anything by its very nature involves a wresting of the concrete wholeness from its preverbal setting and dangling before the reader such abstractions as one has the skill simultaneously to present in the miraculous succession of a sentence, a paragraph, a treatise. The moment we try to state anything words begin to clutter up the scene, for by their very nature they can deal with aspects only of the whole under consideration and, of course, these aspects are abstractions relative to each other and to the whole from which they are abstracted. The chief value of this verbal dissembling of an object or a situation is the chance that in the experimental analysis glimpses of new synthetic relations may emerge. Thinking is always an alienation of aspects, but back of the thinking, surrounding and suffusing it, is that matrimony of meanings—the qualitative "feel" of the thing—which not only keeps us thinking but gives that thinking ultimately whatever significance it has. Germination does indeed mean the death of the seed as its latent forces quicken into life, but within the shell of the old springs the new, rooted indeed in the past, but budding forth into the future. A verbal statement need not be an autopsy; in skilful hands it may become a vivisectional operation from which the situation emerges with enhanced meanings. Method is the ordering and redirection of experienced values, not a substitute for them.

"A true wisdom . . . discovers in thoughtful observation and experiment the method of administering the unfinished processes

of existence so that frail goods shall be substantiated, secure goods be extended, and the precarious promises of good that haunt experienced things be more liberally fulfilled" (John Dewey, *Experience and Nature*, p. 76).

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COMMENTS AND CRITICISM

DISCUSSION OF BERTRAM MORRIS'S *THE AESTHETIC PROCESS*[1]

Bertram Morris's *The Aesthetic Process*[2] is an interesting book from any point of view, but it is what might be called its geographical position within the field of esthetics that makes it especially worth reviewing. It marks, it seems to me, the furthest point yet reached by the philosophical sector of esthetics in its slow advance toward the scientific sector which lies somewhere beyond it; and while it falls short of closing the gap between them it is at least clearly visible from both these territories. It seems possible that a careful examination of it from each of these two sides might reveal some of the reasons for its failure to unite them.

From the philosophical side it looks, to an amateur in philosophical esthetics, like an admirable piece of work. It obviously springs from a broader and more realistic experience with the arts than most of his predecessors have enjoyed, and, thanks to this practical foundation, he is able to give a more three-dimensional account of the esthetic process and to sprinkle it with wise and incisive comments on many aspects of art. And his account is not only three-dimensional but surprisingly homogeneous, and his various details and illustrations fit smoothly into it.

For Mr. Morris, "any object or feeling is potentially aesthetic" (pp. 53-54), and "the problem of how physical things come to have aesthetic worth is really inverted ... it should be, how does the scientist come to conceive of things apart from aesthetic worth?" He regards the development of a work of art not as something that is arbitrarily imposed on the medium but as a natural reaction between its properties and the thing in the artist's mind that is pushing out toward some sort of expression. "That immanent activity which resolves a thing in its own terms constitutes," he says, "the fabric of the art-process" (p. 21). Or, putting it a little differently, "the aesthetic object is one in which means and end are inherently related to and inseparable from each other" (p. 17), and the esthetic process is "a continuum of culminating

[1] Read at the meeting of the Southern California Section of the American Society for Æsthetics, at Claremont, April 22, 1944.

[2] Evanston, Northwestern University, 1943.

activites, which import the earlier into the later" (p. 15). He inveighs constantly against taking any merely "atomistic" view of art. "The essence of the aesthetic experience is the aesthetic experience, and nothing short of it" (p. 12); and he notes elsewhere "the gross error committed by equating a phase of the situation with the whole situation" (p. 61). Applying this doctrine to specific cases, he points out that "the aesthetic attitude is not in and of itself a complete thing, but is inseparable from the total aesthetic complex in which it appears" (p. 7), and that "aesthetic value can not be equated with pleasure simply, but only with a total experience which has a pleasurable aspect" (p. 12). This is a deeper wisdom than one often finds in any book on esthetics.

He puts equal emphasis on the complexity of the esthetic process, and especially on the variety of the ingredients that enter into it. "Cognition, volition, and affection all share in the emergence of beauty" (p. 60). "We see the asymptomatic coincidence of art as the expression of feeling, as perception, and as imagination" (p. 67). Or, "the artist must judge many threads at once" (p. 81). And again, "judgment on the basis of form alone, as on the basis of content alone, is the illegitimate abstraction which puts it outside the pale of the aesthetic" (p. 137).

He notes in his brief preface that he has been "especially impressed with the need of seeing the implications of time for understanding art" (p. vii), and he seldom forgets this necessity. A process for him is something more than momentum in a predetermined direction; it is something that changes constantly under the influence of its own inherent laws, so that not even the artist himself can foresee when he begins just what form it will assume. "The poet," he says, "knows not whereof he speaks until he has spoken" (p. 167). The product of the esthetic process is "nothing more nor less than the completed process" (p. 27). The "end" of a work of art is "only the ineluctable development of the means" (p. 101). "The art process is unifying; it is not a unity" (p. 29). He even expands this doctrine into the more mystical regions of philosophy, with the help of such words as immanent, determinate, expressive, purposive, and purpose, achieving a richness of meaning which can hardly be suggested in a few lines of a review. Yet its essence may perhaps be caught in two brief statements: that the esthetic process consists, from one point of view, in a clarification and crystallization of the rather indeterminate feeling with which it begins; and that it is incorrect to say that the artist's "purpose" in undertaking to create a work of art is anything less complex than the completed work itself.

When he himself tries to describe his intricate network of theory in a few words he calls it "the theory of the satisfied imagination," and the key words in his reëxpansion of this definition are *resolution* and *fulfilment*. The first of these words, incidentally, suggests the specific esthetic coloring of his theory: any such theory, no matter how general in its application its designer may try to make it, will always fit some one art better than all the rest; in Mr. Morris's case I believe that this one art is music.

I have tried to present as favorable an account as possible of his achievements as a philosopher, because when one begins to examine his work from the scientific side it will not look quite as satisfying. I do not, of course, intend to question the right of any esthetician to philosophize about art instead of examining it scientifically. If he feels that he can solve the problems that interest him most with terms as abstract as immanence, objectivity, attitude, disinterested, contemplation, judgment, value, determinate, and the like, he is welcome to try. But I do believe that esthetics has reached a point in its development at which it is possible to question the wisdom of such a course; and the very excellence of Mr. Morris's book makes it admirable for use as an illustration of the pitfalls which beset the path of philosophical esthetics. It must be recognized, of course, that he has made his task unusually difficult by undertaking to philosophize about a *process*, for nothing as complex as a process, nothing that changes as intricately and as continuously, can possibly be made to reveal the full truth about itself by a method which is conceived primarily as a search for a definition. Yet as it is hard to take seriously any study of art which does not approach it fundamentally as a process, the dilemma is one that must be met by every type of philosophical esthetics. Eliminate process from your concept of art to free the method of definition from any possible challenge and you exclude with it most of the important facts about art; accept art as a process and you will be slowly but relentlessly driven to study it by the open-minded and endlessly curious methods of science rather than by the more rigid ones of philosophy; there is no good stopping-point between these two extremes.

Whether Mr. Morris actually arrived at his "theory of the satisfied imagination" by the winding route which he offers to his readers or whether, in more traditional fashion, he hit on it by intuition and then built up a reasoned defense of it is perhaps an irrelevant question, but he at least deserves considerable credit for presenting his definition by the first method—and for introducing it with a cautious declaration that "one cannot define a field until it has been explored" (p. 1). Few books on esthetics

begin as modestly. Yet, in any case, it seems obvious that he would have been a little disappointed if his explorations had discovered any process too complex to be defined in a few words. He emphasizes its complexity—but he is conspicuously uninterested in unraveling this complexity. He makes little effort to find out either what its ultimate elements are or how they enter into combination. He does occasionally attribute to some ingredient in the process a specific function, as when he says, "to attain aesthetic objectivity, the vehicle of art must be arresting, for only in this way is detachment possible" (p. 21), or "the aesthetic attitude can be maintained only where there is an object which commands respect" (p. 30), or "feeling facilitates perception" (p. 60). His discussion of material beauty, beauty of form, and the beauty of nature is cast in faintly functional terms (pp. 113–128), and his explanation of ugliness is almost purely functional (pp. 133–140). Yet viewed against the background of the whole book these lucky hits seem purely accidental. They are clearly not what he was aiming at. He seldom seizes on them, as any competent scientist would, as clues to methods by which his analysis might be pushed still further. And he most certainly makes no effort to weld all these observations into a single system of esthetic thought. They are merely by-products of his pursuit of a very different goal—and the true nature of this goal is revealed by the words which recur oftenest in his pages, such as immanence, disinterested, determinate, expressive, unity, and purposive. The concrete terminology of the various arts is conspicuous by its absence; you will not find in his index color, pitch, tone, melody, meter, medium, balance, proportion, line, or accent, nor many other words from the vocabulary that would have to be used in any precise analysis of the esthetic process. He is, in short, more interested in defining the esthetic process as it looks from the outside than in discovering how it actually works. He is willing, in the interest of truth, to take on whatever philosophical difficulties may be involved in conceiving of art as a process, but he balks at the complete shift to the standpoint and the methods of science which the adoption of this concept of process actually requires.

From the scientific standpoint such words as objectivity, disinterestedness, and contemplation belong only to rather superficial aspects of the subject. What the scientist wants to know is what starts the esthetic process, what keeps it going, and what makes it so interesting, rather than how it differs from science and play and dreams. For him the important factors in the case are the devices by which the artist catches the spectator's attention, the continuities by which he tempts him from one detail to the next,

the ways in which the importance of each new detail is intensified by all those that have preceded it, and the complete projection of the total product of the process into the object which has aroused and sustained it—and, above all, the ways in which all these things interact to increase, almost unbelievably, the human value of the whole process. And he wants to know these things because he is keenly aware that neglecting them will seriously distort anyone's picture of either the creation or the appreciation of art.

In using Mr. Morris as the horrible example of the results of such neglect I do not wish to blame him primarily but rather the technique of investigation he has adopted. I am beginning to suspect that not even the most brilliant of estheticians could ignore these fundamentals—and work instead with a set of philosophical definitions—without becoming involved in a long series of errors. The special value of citing his errors is that they come from a man who has probably modernized his thought as far as the limitations of philosophy will permit and has worked out his conclusions brilliantly within those limits. If he repeatedly misses the truth it casts a great deal of doubt on the validity of his method.

He states early in the book, for example, that the esthetic process does not involve a relationship between the observer and the work of art (p. 28), and it seems to be faith in this dictum that leads him to the obviously absurd statement that "works of art may be enlarged or made smaller without losing worth" (p. 43) —which can easily be disproved by looking at either a two-foot model of a Gothic cathedral or a greatly enlarged photograph of a square inch of a Rembrandt canvas. Similarly, the deep faith in the "disinterestedness" and the "impracticality" of art which he shares with all philosophical estheticians tempts him into another position which does not seem to fit the facts. He states positively that if an artist "is creating for anyone else and not himself, his art is bound to be pap" (p. 44), and then conveniently ignores all the deliberate devices by which a painter, say, attracts the attention of a passerby, keeps his eye moving smoothly over the canvas, and satisfies his latent demand for equilibrium among the details and for gravitational stability in the general design of the picture. While it may not be precisely true to say that at this level of his work he is creating for someone else rather than for himself, it must be recognized that what he does here serves a different function and is aimed at a different objective from the things that he does purely to satisfy himself. It must be admitted, at the very least, that he is shaping this foundational part of his work to fit the needs of some universal and impersonal consciousness which must be regarded as common to all potential observers

of his work. It comprises not so much what he personally wishes to do as what he must do, to make his picture function at all as a work of art and to enable it to satisfy certain elementary demands which are sure to be made on it. Perhaps all these things might better be described as good craftsmanship than as creative art, but as they ultimately become an integral and inseparable part of a work of creative art it is impractical to try to dissect them out and discard them as "not-art," or as pap. The only permissible solution is to formulate an account of the nature of art that will be sufficiently complex to include them. Such an account can be arrived at rather easily by an open-minded, well-rounded analysis of the esthetic process but only with great difficulty by a mere attempt to define it or to describe it in abstract terms.

This external approach to the subject leads to various sorts of confusion and incompleteness. He tends always to emphasize the esthetic process at the expense of the esthetic object, as he could never do if he had ever comprehended the complete and detailed dependence of the former on the latter. He declares, for example, that any attempt to dissect a work of art into its physical elements confronts one with "the impossible task of getting the elements back together again in an aesthetic whole" (p. 53), as if he did not quite realize that these elements are related to the esthetic process much as the track of a roller coaster is to the car that runs on it. One can dissect this track into its constituent curves or one can jump in the car and coast over it; neither process excludes, or even hampers, the other. The same failure to make a precise analysis of his material leads him to slur over the innumerable differences between creation and appreciation, to such an extent, indeed, that one can not always be sure which of the two he is talking about. It is true that the similarities between them still need emphasizing, but not at the cost of ignoring most of their differences. It is from studying these differences minutely that we can learn most about the nature of each and about the character of art as a whole. He disregards in similar fashion the strong tendency of most men to reserve the word "beauty" for the upper levels of esthetic value and applies it indiscriminately to the whole gamut of such values. He even states dogmatically that "there are no degrees of beauty" (p. 165). And except for discussing briefly, as we have noted, beauty of form, material beauty, the beauty of nature, and several types of ugliness, he pays little attention to the vast field of the comparative anatomy of the arts, from which so much of our best knowledge has come. Even when he penetrates—accidentally, I am afraid—to the very core of ugliness with his observation that it is "a mark of the failure of aesthetic

fulfilment" (p. 140), it does not occur to him that it might be possible to explain beauty more precisely by reversing this formula and describing it as the product of an esthetic experience in which there is a *minimum* of block and a *maximum* of fulfilment.

To turn to more concrete errors, it is, I believe, his failure to make any careful analysis of either the historical development of Gothic architecture or our modern response to it that betrays him into referring to it as a "dematerialization" of stone. This is not the place to argue that question at length, but I should like to suggest that the stone in a Gothic structure is not dematerialized at all. At any given point there is an adequate amount of stone and it functions like any other stone. Any impression to the contrary springs, I think, from two very distinctive characteristics of Gothic: the weight to be borne by the stone at any given point is reduced, by a variety of devices, to a minimum, and even this relatively small residuum of weight is broken up into slender strands instead of being integrated in the far more impressive mass of an unbroken wall. To think of the stone as dematerialized is to misunderstand the whole spirit of Gothic. Again, when he permits himself to say that "mathematical elegance resides in simplicity; the elegance of art in expressiveness" (p. 41) it is because he has not considered either carefully enough to realize that expressiveness has to be intensified by simplicity before it can achieve elegance, and that, similarly, simplicity alone does not suffice in mathematics but must be reënforced by the mathematical equivalent of expressiveness, which might be described as continuous movement toward the completion of a proof. When he asserts that "when the creator reveals himself in his work, he is stepping outside his rôle as author, and at precisely that point the work fails" (p. 108), he is ignoring, in very arbitrary fashion, a great deal of the world's esthetic experience with such artists as Michelangelo, Beethoven, Goya, Fra Angelico, and Wordsworth. And at the other end of the esthetic scale, he reveals a similar inattention to the functions of the *medium,* in both creation and appreciation. He mentions a number of times, for example, that the artist's conception must always be firmly embedded in a medium, but each time he neglects to state precisely how this must be done or why. I am strongly inclined to distrust any esthetic theory which sidesteps, intentionally or otherwise, as basic a problem as this. The perception of the fact alone is important, and creditable, but it affords no leverage for the solution of other problems and leads nowhere. We need to know exactly why the medium plays so important a rôle in art, and Mr. Morris's theory does not tell us.

Finally, he makes it quite clear that he prefers to adopt a rigorously narrow concept of the esthetic process which will enable him to say that "the strictly aesthetic problem consists in distinguishing aesthetic features of the creative process from irrelevant psychological features" (p. 55), instead of shaping up a broad and comprehensive theory in which there would be a place for every sort of "feature" which might affect the result—and in which every feature which did so effect it could be properly called esthetic. If a biological chemist should announce that he would pay attention only to organic compounds and disregard "irrelevant" inorganic ones such as NaCl and H_2O, the absurdity of his statement would be recognized at once, yet I can not see that Mr. Morris's distinctions are any more firmly grounded than these. A similar error which is very prevalent among the philosophers, and from which Mr. Morris is not wholly free, consists in assuming that the genus art includes only the most highly developed of its species—which is reminiscent of the pre-Darwinian habit of thinking of mankind as something wholly distinct from the animals rather than as a species which had evolved from their levels by a continuous series of infinitesimal changes. A scientist who took art for his field would feel obliged to include under that name anything, however simple or barbaric, to which men had anywhere applied it—and I am inclined to guess that the amount of knowledge which the philosopher and the scientist might acquire about art might be roughly proportional to the square of the amount of art which each includes in his definition. Certain fragmentary bits of knowledge may come from narrowing the field of investigation, but the most profound knowledge comes from widening it again.

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BOOK NOTE

The Religious and Philosophical Aspects of van Helmont's Science and Medicine. WALTER PAGEL. (Supplements to the Bulletin of the History of Medicine, No. 2.) Baltimore: The Johns Hopkins Press. 1944. ix + 44 pp. $1.00.

The aim of this excellent monograph is to exhibit the details of van Helmont's various scientific achievements as integrally connected with his larger theological and philosophical views. The author thus stresses relations which are usually minimized or dismissed in discussions of van Helmont's researches in physics and

medicine. Dr. Pagel shows convincingly how van Helmont's opposition to the formal logic of the schoolmen was associated with a rejection of the materialistic philosophy of the ancients, and he gives a valuable account of the manner in which van Helmont's vitalistic pluralism served as the basis for the latter's contributions to modern science. He thus makes out a highly plausible case for the thesis that van Helmont's "religious attitude alone explains the so called contradictions in his methods, endeavors, and achievements. We can now *understand* why the scientist who used the balance, who designed scientific instruments, who expressed his results so admirably in quantitative and chemical terms, who founded Biochemistry and Pathology on experimental knowledge, —why this man deprecated 'Ratio,' accepted magic effects and miracles as genuine natural phenomena and never completely concealed his ultimate doubts in the possibility of full human knowledge."

E. N.

NOTES AND NEWS

The first number of a new philosophical periodical, the only one in Latin-America which purports to devote itself exclusively to philosophy, has appeared and it makes a very good appearance indeed. *Minerva* is a bi-monthly "continental review of philosophy," edited by Mario Bunge at Buenos Aires, and introduced to North American readers through the good offices of the Division of Intellectual Cooperation of the Pan American Union. Its editor explains that he conceives it to be the duty of philosophy in general and of *Minerva* in particular to enter the field of battle in behalf of reason and liberty—not of rationalism, nor of pure reason, but of "la autovaloración de la inteligencia." He hopes that *Minerva* will contribute to a closer intellectual coöperation among philosophers not only in Latin-America but also on the entire American continent. Accordingly, philosophical thinkers of "the three Americas" are especially invited to contribute and coöperate. Manuscripts may be written in any Western language.

The first number contains the following articles: "La filosofiá de Giordano Bruno" by Rodolfo Mondolfo; "Qué es la epistemologiá?" by Mario Bunge: "El irracionalismo en la física contemporánea" by Simon M. Neuschlosz; "Meister Eckhart y Martin Heidegger" by Isidoro Flaumbaum; "Conflicto de vida y muerte de Antonio Machado" by Hernan Rodriguez. Then there are several pages of notes in which the editor makes interesting com-

ments on "precursores, predecesores y predictores" in the development of both philosophy and science, presents a brief review of Professor Frondizi's last annual survey in the *Handbook of Latin American Studies* of the year's production of philosophy in Latin-America, calls attention to important historical events and to several major contemporary problems. There are about twenty pages of book notes and critical reviews.

Forthcoming numbers will bring the following exceptionally interesting articles: "Panorama de la filosofía en Latinoamérica" by Risieri Frondizi; "El círculo de Viena y la filosofía científica" by Hans Lindemann; "La escuela histórico-cultural" by Victor Litter; "La estética de Paul Valéry" by Leopoldo Hurtado; "Auge y fracaso de la filosofía de la naturaleza" by Mario Bunge; "Influencia de Plotino y San Agustín sobre el pensamiento contemporáneo" by Isidoro Flaumbaum; "El Dios de Scheler" by Alvaro Rodriguez; "La sociología norteamericana" by Gino Germani; "Rilke y el existencialismo" by Günther Kusch; "El círculo de Stefan George" by Paul Zech; "La concepción nietzscheana de la cultura" by Placido A. Horas.

The annual subscription price outside Argentina is $4.00. Single numbers 80 cents. Important articles will appear separately in reprints and may be obtained for 20 cents each. The name and address of the publisher is Adolfo Morinigo, Aristóbulo del Valle 154, Buenos Aires, Argentina.